From: Robert Jasinski
To: Jed2; Richard Borchardt
Date: Mon, Jun 28, 2004 6:58 AM
Subject: **Fwd: Vermont PSB Slides and Scripts**

FYI.

Our final product for this morning's session with the VT PSB.

CC: Bruce Boger; Christopher Grimes; Cynthia Carpenter; Darrell Roberts; David Matthews; Frank Gillespie; Michael Case; Michael Johnson; Richard Barrett; Suzanne Black ; Tad Marsh

B/3/

From: Allen Howe
To: Anderson, Cliff; Brenner, Eliot; Burnell, Scott; Dyer, Jim; Ennis, Rick; Holden, Cornelius; Holian, Brian; Jasinski, Robert; Kim, Tae; Marsh, Tad; Outlaw, William; Pelton, David; Richards, Stuart; Ruland, William; Screnci, Diane; Sheron, Brian; Skay, Donna; Virgilio, Rosetta
Date: Fri, Jun 25, 2004 2:10 PM
Subject: Vermont PSB Slides and Scripts

Attached are the slides and scripts we plan to use at the PSB meeting on Monday. In addition there are Qs&As attached.

Allen

Vermont Yankee Power Uprate

U.S. Nuclear Regulatory Commission Review and Inspection Processes for Power Uprates

Presentation for

Vermont Public Service Board Meeting

June 28, 2004

Opening Remarks

- Why we are here
  - To provide the Vermont PSB an overview of NRC's review and inspection efforts related to Entergy's application for a 20% extended power uprate at Vermont Yankee
- What we hope to accomplish
  - Demonstrate that NRC's review process is comprehensive, thorough, and assures safety
  - Answer questions you may have

Agenda

- Opening remarks – Bill Ruland
- Power uprate review – Bill Ruland
- New engineering inspection – Stu Richards
- Inspections at Vermont Yankee – Brian Holian
- Questions and answers
- Concluding remarks – Bill Ruland

NRC Mission

- What does the NRC do?
  - NRC's mission is to protect the public health and safety, and the environment from the effects of radiation from nuclear reactors, materials, and waste facilities. We also regulate these nuclear materials and facilities to promote the common defense and security.

NRC Review of Vermont Yankee Power Uprate

- Application and three supplements submitted in September and October 2003
- NRC meeting held in October 2003
- NRC informed Entergy in December 2003 that more information was required
- Entergy provided additional information
- NRC accepted the application for review in February 2004

NRC Review of Vermont Yankee Power Uprate

- NRC is currently proceeding with detailed review
  - Seventeen technical areas with an estimated 4000 hours of review
- NRC will perform necessary audits and calculations
- NRC has requested additional information from Entergy and expects a response by June 30, 2004

Public Process

- NRC's *Federal Register* notice will provide an opportunity for the public to comment and/or request a hearing
- NRC will issue a draft environmental assessment for public comment
- NRC will address public comments and issue final environmental assessment
- NRC will address public comments and hold another public meeting on the uprate application
- Vermont Yankee web page:
  - http://www.nrc.gov/reactors/plant-specific-items/vermont-yankee-issues.html

NRC Review of Vermont Yankee Power Uprate

- Advisory Committee on Reactor Safeguards (ACRS) will review and consider Entergy's application and the NRC's staff's safety evaluation
- NRC staff will brief ACRS on the staff's review of the power uprate and the staff's conclusions
- NRC senior management will review the staff's recommendation on the power uprate

Comments/Concerns Received

- Technical and safety matters
- Review and inspection processes
- Operating experience
- Vermont Yankee licensing basis
- Additional inspections

New Engineering Inspection

Stu Richards

NRC manager responsible for the inspection program

New Engineering Inspection

- NRC initiated a trial inspection program which seeks to enhance NRC inspection in the design and engineering areas
- The Vermont Yankee inspection in August will be the first of the four pilot inspections conducted nationwide

New Engineering Inspection
Inspection Objective

- Perform an in-depth, focused, engineering inspection
- Verify that design bases have been correctly implemented for selected risk-significant components and operator actions
- Ensure that components and operator actions meet the safety functional requirements

New Engineering Inspection

- The inspection will be conducted by a team of six or seven inspectors, including two or three contractors with expertise in power plant design
- The inspection uses design information, equipment performance data, and risk assessment to focus the inspection on components and operator actions of relatively high safety significance

New Engineering Inspection

- Relevant industry operating experience will be assessed in the inspection sampling
- Will include components that could be event initiators and those used to mitigate events
- Some components affected by the power uprate will be part of the inspection
- Disposition of inspection findings

Inspections at Vermont Yankee

Brian Holian

NRC manager responsible for inspection oversight at Vermont Yankee

Past Engineering Inspections

- Engineering products, system performance and corrective action effectiveness are regularly evaluated by on-site resident inspectors and regional specialists
  - Quarterly inspection reports
- Since 1997, six engineering team inspections were performed at Vermont Yankee
  - Four to eight inspectors (either NRC or contractor)
  - Separate inspection reports

Vermont Yankee Engineering Assessment Inspection

- Three weeks of on-site inspection with additional work performed away from site
  - Weeks of August 9, 16, and 30
- Planned inspection team
  - Team leader
  - Three contractors
  - Three experienced NRC inspectors
  - One inspector in training
  - One observer from the State of Vermont
- Exit meeting open for public observation
  - September
- Inspection report
  - October

Vermont Yankee Engineering Inspection
Inspector Independence

- Contractors – Never employed by Entergy or Vermont Yankee and no recent contract work
- NRC inspectors and team leader
  - Will not be current or former resident inspectors at Vermont Yankee
  - No recent engineering inspections at Vermont Yankee

Other Inspections at Vermont Yankee

- Inspections focused on power uprate
  - Operational aspects
  - Maintenance
  - Testing
  - Modifications
- Routine inspection activities
  - Resident inspectors
  - Specialist inspectors from the regional office

Conclusions

- NRC's power uprate review is thorough, comprehensive, and focused on safety
- Entergy must provide sufficient justification to show that safety is maintained: they are not there yet
- NRC's review is ongoing
- NRC values your comments and will give them serious consideration
- New engineering inspection will be thorough, independent, and cross several systems
- NRC will only approve a power uprate after we are satisfied that it is safe

VERMONT PUBLIC SERVICE BOARD MEETING ON VERMONT YANKEE EXTENDED POWER UPRATE

BACKGROUND

Entergy submitted a 20-percent extended power uprate (EPU) package for staff review on September 10, 2003. In addition to NRC approval, the plant must get approval from the State Public Service Board (PSB) to increase rated power. On March 15, 2004, the State PSB approved the uprate if certain conditions are met. One of these conditions is that the NRC conduct its analysis in a way "that will provide Vermont with a level of assurance about reliability equivalent to an independent engineering assessment." The PSB order approving the VY power uprate was very specific with regard to what it was requesting of the NRC. It asked that 1) the NRC's review be independent in the same sense as the Maine Yankee ISA, that is, that it be performed by experts "independent of any recent or significant regulatory oversight responsibility" of Vermont Yankee; 2) that it will consist of a "vertical slice review" of two safety-related systems and two Maintenance Rule, non-safety related systems affected by the uprate; and 3) that the assessment be reviewed by the ACRS in the context of its evaluation of the power uprate. The PSB is precluded under Federal law from reviewing radiological concerns regarding the power uprate. The Vermont State Senate has also approved a resolution calling on the NRC to conduct an engineering evaluation of Vermont Yankee.

Some of the technical issues associated with the power uprate that may raise questions or concerns from the public include: 1) this is the first use of the new Review Standard for Power Uprates, 2) this is the first power uprate to reference a new topical report, NEDC-33004, Constant Pressure Power Uprate, which utilizes a streamlined methodology and review process, and 3) the concerns related to recent steam dryer cracking at other General Electric plants that have been granted EPUs in recent months.

Key Messages

- Our current processes, including the ongoing NRC inspection program and the extensive power uprate review are fully capable of assessing whether safe operation can be maintained at this facility following a power uprate. The NRC will not approve the Vermont Yankee uprate unless we conclude that the proposed change can be executed in a manner that assures the public's health and safety will be maintained.

- The NRC has developed a new engineering inspection program which we will pilot at selected plants. We considered a number of factors and concluded it is appropriate to conduct this pilot engineering inspection at Vermont Yankee. This pilot inspection incorporates the best practices of the existing and past design and engineering inspections.

- The scope of the engineering inspection will include components and human actions from multiple systems, both safety and non-safety related. It will review risk-significant components and actions and components from systems that are potentially affected by

a power uprate.

- The NRC does not regulate the reliability of electrical generation. We recognize, however, that there is overlap between attributes that result in safe operation and those that contribute to overall plant reliability.

- NRC's review process for power uprate applications is independent, thorough and comprehensive. It involves both technical reviews, as well as inspections that will allow us to determine whether Vermont Yankee can operate safely at a higher power level.

- The Advisory Committee on Reactor Safeguards (ACRS) will also review the Vermont Yankee power uprate request. The NRC staff will provide the results of its review efforts, including relevant inspection findings, to the ACRS for review.

- We will continue to coordinate closely with the State of Vermont to facilitate participation by State representatives in our inspection activities.

QUESTIONS AND ANSWERS

Questions about the Vermont Public Service Board Request

1. **The PSB said the level of effort necessary for this work should consist of a "vertical slice review" of two safety-related systems and two Maintenance Rule, non-safety related systems affected by the uprate and require "about four experts for about four weeks." The NRC letter to the PSB calls for more experts but they would be there for about three weeks. How does this fit with the PSB's request? Is it comparable or greater? Do you believe it will be satisfactory to the PSB? Is the NRC willing to alter its plans if the PSB is not satisfied?**

   We believe that our pilot engineering inspection satisfies the PSB request for system coverage and inspection size. Our pilot inspection will sample components across multiple systems to verify that design bases have been correctly implemented and to pro-actively identify latent design issues. The inspectors will use risk and engineering methods to select risk-significant components from multiple systems. Although our specific sampling of components has not been finalized, they will include components from multiple systems that are potentially affected by a power uprate such as theemergency core cooling, containment, power conversion or auxiliary systems.

   The level of inspection for the planned pilot inspection exceeds our earlier planned effort by about 200 hours and is also greater than the PSB request. We are also performing a number of other inspections that will look at issues specifically related to power uprate. We believe that our detailed technical review of the Vermont Yankee power uprate request and inspections, as well as our pilot engineering inspection, will provide the information necessary for us to make a decision on whether VY can safely operate

under uprated conditions and will assist the PSB in informing the Board's decision on future reliability of Vermont Yankee.

2. **On the issue of independence, how many members of the NRC team would be able to meet the criteria spelled out in the PSB's request?**

The inspection team will consist of 7 members including: a team leader, 3 contractors with design experience, and 3 experienced NRC inspectors. An observer from the State of Vermont will also accompany the team. To ensure the independence of the team, the contractors to be selected must (1) have never have been directly employed by Entergy or Vermont Yankee; (2) have not performed contract work for Vermont Yankee or Entergy within the last two years; and (3) have not performed inspections for the NRC at Vermont Yankee within the last two years. The NRC inspectors will not be current or former resident inspectors at Vermont Yankee or have participated in an engineering inspection at Vermont Yankee within the last two years.

3. **Will the results of the engineering inspection be evaluated independently of the inspection team?**

Any findings from this inspection will be handled in accordance with our established Reactor Oversight Program and Enforcement Policy. Results of this inspection will be considered during the review process and will be made available to the Advisory Committee on Reactor Safeguards for their consideration in their independent review. We believe that these activities are consistent with the intent of the PSB's request.

4. **How does the review the NRC has proposed doing at VY compare with the ISA requested by the State Senate and other groups and individuals?**

The review being conducted of the proposed power uprate at VY is of a different scope and size than the ISA conducted at Maine Yankee because the purpose is different.

The ISA at Maine Yankee was performed in response to an investigation of allegations regarding use of a computer code. Because of the nature of these allegations and the involvement of the Inspector General, the NRC determined that the assessment at Maine Yankee should be conducted by persons independent of the routine oversight of Maine Yankee. The NRC decided to conduct the assessment at Maine Yankee because we had significant concerns with conformance to license requirements; a situation that does not exist currently at VY.

5. **In light of the recent revelation that two spent fuel rod segments are missing at Vermont Yankee, the fire in the transformer, and the discovery of steam dryer cracking, shouldn't the NRC be willing to go above and beyond what the PSB is asking?**

The NRC's current inspection and review activities to evaluate Entergy's performance associated with the unaccounted fuel rod segments, the fire, and steam dryer cracking issues are fully capable of assessing whether Vermont Yankee is being operated in a safe manner. In addition to our detailed technical review of the uprate request, our inspections focused specifically on power uprate, and our pilot engineering inspections will provide the information necessary for us to make a decision on the safe operation at Vermont Yankee under uprated power conditions.

6. **What is the difference between the PSB's role and the NRC's role in ensuring safety of the plant?**

The type of analysis recommended by the PSB was based on concerns with the reliability of the plant. The PSB is precluded under federal law from reviewing radiological concerns regarding the power upgrade. Specifically, the PSB's stated concern is the effect that a large power uprate will have on the reliability of the plant output in light of recent difficulties that have been experienced by other boiling water reactors following extended power uprate implementation.

NRC regulations and oversight process focus on ensuring nuclear safety regardless of the mode of plant operation. The NRC's statutory authority does not extend to regulating the reliability of generator output. We recognize, however, that there is overlap between attributes that result in safe operation and those that contribute to overall plant reliability. Proper operation and maintenance strongly contribute to plant safety and, by extension, the reliability of plant output.

7. **How can the NRC approve the VY request to credit containment overpressure since it is not in conformance with NRC regulations?**

We have not yet made a determination on whether it is acceptable for Vermont Yankee to credit containment overpressure.

The NRC's current position is that containment overpressure credit is only allowed if analysis has demonstrated that, using conservative assumptions, this pressure will be available for the design basis accidents, and, when examined from a broader perspective than just the design basis accidents, an acceptable level of safety is maintained.

An elaboration of the NRC's current position on this issue will be included in our response to the State of Vermont's letter dated December 8, 2003. The response is expected to be issued in the very near future. This issue will also be addressed in the NRC's response to Mr. Lochbaum's letter to the NRC dated March 12, 2004.

8. **How will the NRC respond to the requests from the State of Vermont regarding independent calculations and their views on the alternate source term proposal?**

The NRC staff is currently evaluating the letters from the State of Vermont dated June 8 and June 9, 2004, which provided comments regarding the proposed power uprate and alternative source term amendments for Vermont Yankee. Responses to both of these letters are expected by August 31, 2004.

9. **What will the team inspect to? the new power level or current level?**

We will inspect to the current applicable design and licensing basis. However, insights generated by the inspection will be provided to the staff reviewing the uprate to confirm that potential issues are considered. The inspection will review safety margins for capability at the uprate power level and any anomalies will be fed back to the technical reviewers.

10. **What is the interface between the inspectors and the tech staff- how will tech issues from the staff before the inspection be communicated to the team; i.e., how will the team inform the tech staff?**

The list of components to be inspected will be developed by both the inspection team and the technical reviewers for the power uprate application to ensure that components critical to the uprate will be included. The technical reviewers and inspectors will be in frequent communication to allow the reviewers to request that certain aspects of a component be looked at and to feed back information from the inspection to the reviewers.

11. **Will the NRC release the names of the team members prior to the inspection?**

The NRC does not release the names of inspection team members prior to an inspection. This is to ensure that licensee's do not have any prior knowledge of a specific inspector prior to an inspection that may give them an advantage in preparing for the inspection.

12. **Will the NRC allow members of the public to observe the inspection?**

The NRC believes that an observer from the State can adequately represent the public in his role as observer. The NRC does not have input into the decision regarding the individual chosen to represent the state. Members of the public will have opportunities to learn about the inspection process and findings through the public meetings.

14. **The NRC has not responded to several letters yet concerning comments on the power uprate. Will the NRC respond to every question about the uprate?**

The NRC considers all comments received from our stakeholders. In most cases we have provided formal letter responses. The staff has developed a Vermont Yankee website which includes a frequently asked question section. In some cases, we may add new Q and A's to the website rather than provide a formal letter response.

The website address is: http://www.nrc.gov/reactors/plant-specific-items/vermont-

yankee-issues.html

15. **Has the NRC ever revoked any power uprates after they were approved?**

Yes we have. Let me give you a few examples of this.

When we learned that analyses performed by the licensee for Maine Yankee were not adequate to support the power uprate, we issued a confirmatory order to limit the power operation of that plant to its originally licensed power level. As a matter of fact, we took action very quickly in this case. We were notified of this in December 1995 and issued our confirmatory order on January 3, 1996.

After approving the General Electric topical report that Vermont Yankee is using for its power uprate, we learned that General Electric intended to use the topical report in a manner inconsistent with our technical basis for approving the report. Based on this, we withdrew our approval of the topical report until General Electric revised the report to make it consistent with our technical basis for approval. We also insisted that the report be further clarified to leave less room for interpretation. Let me add that resolving the differences took longer than 7 months. We finally received a revised report and approved it on March 31, 2003. I refer you to a letter we sent to General Electric on August 12, 2002, for more information on why we withdrew our approval.

Another example involved the Quad Cities units, which are currently limited to operating at pre-power uprate levels. The licensee has agreed that both units at Quad Cities will be limited to pre-EPU power levels until we are satisfied that they have fully addressed the dryer cracking issues.

A fourth example is a small power uprate we approved for Fort Calhoun. In our amendment for that power uprate we included implementation conditions that the licensee must meet before increasing power level. The licensee could not meet those conditions and, because of that, the licensee had to come back to us to take away that uprate. We did so by a license amendment dated May 14, 2004. So in this case, if the licensee resolves the issues it had in implementing the uprate and wants to increase power level, it will have to get our approval to do so.

In several cases, licensees have met with us in a public forum to discuss their plans to submit power uprates. During these discussions we pointed out to them that certain aspects of their applications would not be acceptable. This has resulted in the licensees either delaying or not submitting their power uprates.

16. **The NRC's Review Standard RS-001 states that the NRC staff should consider the confidence in the models and/or methods used by the licensee and confidence in the licensee's analysis results in determining whether to perform independent calculations. The NRC doesn't sound like they have confidence in the models, methods and analysis on the steam dryer issue. Are you planning to perform independent calculations as requested by the letter from the State of Vermont dated June 8, 2004?**

The Review Standard calls for the staff to consider doing calculations and/or audits. At present, the staff is planning an audit in San Jose to review the steam dryer analysis performed by Entergy's contractor, GE Nuclear Energy. In other technical review areas we have plans to perform calculations in accordance with the process in the Review Standard. The specific calculations and audits we will perform have not yet been finalized.

Comments Before the Vermont Public Service Board
By Bill Ruland, Director, Projects Directorate III, DLPM/NRR
June 28, 2004

Slide 1

Good morning. My name is Bill Ruland. I am the manager responsible for the power uprate program at the Nuclear Regulatory Commission. In my 22 plus years with the NRC, I have worked as a site inspector and a regional inspection supervisor, led special inspection teams, and now I'm responsible for the project management of licensing activities for nuclear plants in the Midwest.

I am here with my colleagues Stu Richards and Brian Holian to discuss the review and inspection processes that the NRC staff is using for reviewing the Vermont Yankee power uprate application.

We appreciate the opportunity to speak with the Board and for the previous opportunities to speak at public meetings in March of this year and with the Vermont State Nuclear Advisory Panel a year ago in June. We believe these meetings help us meet our goal to reach out to you and the public and to hear your concerns and views on the issues under our review. We believe this dialogue is healthy for our review and for assuring public health and safety, which is our mandate and the ultimate goal at the NRC. We value comments provided during these meetings and those we receive in writing and I assure you that we take them all very seriously. I look forward to our dialogue today.

Next slide please.

Side 2

So why are we here?

As indicated on the slide, we're here today to provide the Vermont Public Service Board an overview of our review and inspection efforts related to Entergy's application for a 20 percent extended power uprate at Vermont Yankee.

We hope to show that our review of the Vermont Yankee application is comprehensive, thorough, and will assure that safety is maintained. As part of our presentation, we will briefly discuss areas of concern that you have already shared with us. On a number of those issues, our review is continuing and we don't have answers–yet. As we hope to demonstrate, we take these issues seriously, which means our careful evaluation takes time.

We believe that we have in place a robust process for reviewing power uprate applications. In addition, for Vermont Yankee, we are supplementing this process by closely linking a new pilot engineering inspection that we described to you in our May 4th letter. We believe that our safety review will be able to determine whether allowing this power uprate will be safe. The expanded engineering inspection will provide additional confirmation, beyond the routine inspection program, of the Vermont Yankee plant design as we consider whether or not we should approve the power uprate. Let me reiterate that we will not approve the power uprate unless we, the NRC, determine that it is safe. And as always, we welcome comments from members of the Board and the public on this review.

Next slide please.

Slide 3

Here's our agenda.

I'll discuss the review process we're using for the Vermont Yankee application. This will include the status of the review and a discussion of some of the comments that you and other Vermonters have shared with us.

Then Stu Richards will provide an overview of the new pilot engineering inspection that we plan to conduct at four plants nationwide, including Vermont Yankee.

Brian Holian will follow with a discussion of how this engineering inspection at Vermont Yankee fits into the larger context of our inspection program at the plant.

After a question and answer period, I'll make some concluding remarks.

Next slide please.

Slide 4

Before getting started on the main focus of the presentation today–the Vermont Yankee power uprate–I'd like to take a minute to discuss the Nuclear Regulatory Commission's safety mission.

As mandated by federal law, the NRC is an independent federal agency with the mission to protect the public health and safety, and the environment, from the effects of radiation from nuclear reactors, materials, and waste facilities. The NRC also regulates nuclear materials and facilities to promote the common defense and security.

Our power uprate review and our inspection program is designed to fulfill this mission.

Next slide please.

Slide 5

As you know, we received Entergy's application for the power uprate and 3 supplements and held a public meeting on the application in the fall of 2003.

We performed an acceptance review and concluded that the application was not complete. Our December 2003 letter notified Entergy of the deficiencies in their application.

The application and supplements needed more information in certain areas before we could proceed with our full review. These areas included: the applicability of generic General Electric safety analyses to Vermont Yankee; certain topics covered in the NRC's Review Standard; and steam dryer integrity.

As requested, Entergy submitted additional information to complete its application.

After reviewing the additional information, we accepted the application for review in February 2004. This acceptance is not a pre-approval of the power uprate. It is merely an indication that the topics of interest for this power uprate are covered in sufficient detail to allow us to continue with our detailed review.

Next slide please.

Slide 6

We are continuing with our detailed review of the application. I know an item of interest to you is independent calculations. We will perform the necessary audits and calculations as part of our detailed review. For example, NRC staff plans to conduct an audit of the analysis of the steam dryers.

Thus far in our review, we have identified the need for more detailed information in several areas. The licensee has responded to some of our requests and is currently working on providing the remainder of the information that we've requested so far. We're expecting Entergy to submit more information shortly.

Next slide please.

Slide 7

There are several upcoming milestones that provide public comment opportunities.

Our next milestone is to publish a Federal Register Notice to provide an opportunity for the public to comment on the application and/or request a hearing. We issued the Notice this past Friday, and it should be published in the Federal Register on or near July 1st.

We will also prepare and issue a draft Environmental Assessment for public comment. We will then evaluate the comments, modify the draft environmental assessment as necessary, and issue it in final form.

Because of the significant public interest in the Vermont Yankee application, we plan to hold another meeting with Vermonters closer to the completion of our review. The exact format and content for this meeting still needs to be worked out.

I have included the Vermont Yankee web site link on the slide. It is the easiest way to find the above documents and links to a wide range of related information.

Next slide please.

Slide 8

Once we have completed our draft safety evaluation that documents our review, and if we, the staff, find the uprate to be acceptable, we will transmit it to the Advisory Committee on Reactor Safeguards or ACRS for their review.

The ACRS is a statutory committee authorized by Congress. The Committee has about a dozen members, most with advanced degrees–Doctorates–and all with substantial experience in their respective areas of expertise. Their review is independent of the review conducted by the NRC staff. They will review and consider both Entergy's application and our draft safety evaluation for the power uprate.

This Committee reports directly to the NRC Commissioners and not to NRC management. The Committee's independence, we believe, is evident by the comments they have provided on our work in the past.

NRC staff will brief the Committee on the results of our review of the power uprate application to support its own review. Typically the licensee also briefs the Committee.

The Committee will document its conclusions and recommendations in a letter.

Following the Advisory Committee on Reactor Safeguards briefings, we will present our evaluation and conclusions to our senior management for their review. Because this is an extended power uprate review, additional levels of management review are added. The senior official in the Office of Nuclear Reactor Regulation, Mr. James Dyer, is the final decision-maker for the extended power uprate.

Next slide please.

Slide 9

Let me now talk about some of the comments we've received related to the power uprate review.

The primary technical issues that have been raised by various stakeholders are related to steam dryer integrity, flow-induced vibration, and credit for post-accident containment over-pressure.

As I'm sure you're aware, a few plants have found significant cracks in their steam dryers following implementation of a power uprate. Entergy also identified cracks in the steam dryer for Vermont Yankee during their recent outage. Although the steam dryer is not designed to mitigate an accident, it must retain its structural integrity. The integrity of the steam dryer is important because of the potential for loose parts to damage accident mitigation equipment.

As part of our review, we have asked Entergy to provide additional analysis and data to address this issue. Our letter to Entergy emphasized that the NRC needs to fully understand the analysis, design, and monitoring that Entergy plans for the Vermont Yankee steam dryer.

Some plants have also experienced damage to other plant components, such as valves and pipe supports, following a power uprate. This damage has been attributed to flow-induced vibration. The NRC has requested Entergy to provide further information regarding this issue as well.

The steam dryer integrity, and flow-induced vibration issues, are getting a lot of attention by the NRC and are probably the biggest technical challenges associated with power uprates at this time.

Additional interaction between the NRC staff, Entergy, and Entergy's contractor, GE Nuclear Energy, is planned on these issues. These interactions include a public meeting scheduled for July 22nd at NRC headquarters.

The bottom line is that the NRC staff will continue to pursue these issues until we are satisfied that safety will be maintained at the proposed uprated power conditions.

...Pause...

Some have raised concerns regarding the crediting of containment post-accident pressure in the safety analysis calculation of the net positive suction head, for the emergency core cooling system pumps. This issue is under active review and we will be responding to those questions and concerns in writing shortly. While there is precedent for using post-accident pressure in the safety analysis calculations at a number of plants, we are currently examining our past practice before we complete our review in this area.

Regarding this issue, we will respond in writing shortly to the State of Vermont letter dated December 8, 2003, and to the letter from Mr. David Lochbaum, of the Union of Concern Scientists, dated March 12, 2004.

For Vermont Yankee, NRC staff has requested Entergy to provide information on the risk implications of relying on containment over-pressure for the Emergency Core Cooling System Pumps. As you can see, we still have more to do on this issue.

...Pause...

We've received some comments on operating experience with power uprates. We, of course, use past operating experience to inform our future reviews. We have done this in the case of the steam dryer cracking and flow induced vibration issues.

Another concern related to operating experience is the effect of the power uprate on plant reliability. I want to emphasize that our review is focused on safety. As part of our review, we do evaluate the impact of the power uprate on the reliability of systems and our review guidance states that the licensee should provide this information as part of its application. There has also historically been a correlation between safe operation and plant reliability and our performance indicators reflect this fact. Our review process and reviewers also have the benefit of the recent operating experience at uprated plants. However, I do want to note that our job and main focus at the NRC is safety, not power production. So regardless of how much power the plant is producing, our job is to make sure that the plant is safely designed, licensed, and operated.

...Pause...

We received comments about the adequacy of the regulatory criteria used by the NRC in the original licensing of Vermont Yankee. That is, whether or not that criteria is acceptable today.

Our country's nuclear power plants includes several designs. Regardless of the design and age of a particular nuclear power plant, the NRC conducts our rigorous safety reviews and inspections to ensure that the plant is designed and operated in a manner that protects public health and

safety. The reviews and inspections for initial licensing of each of the operating plants, and subsequent reviews related to issues that arise during plant life, have confirmed that the designs of these plants, including that of Vermont Yankee, provide an adequate level of protection of public health and safety. The NRC reviews emerging issues using an established process to determine the appropriate regulatory action for existing plants. That action could range from simply providing the industry information to ordering modifications or additional inspections for existing nuclear plants.

Therefore, our initial review, coupled with our review of emerging issues, extensive inspection and testing requirements, with NRC inspection oversight, provides reasonable assurance of protection of the health and safety of the public.

The last bullet on the requests for additional inspection will be addressed in detail by Stu Richards and Brian Holian so let me now give the mike to Stu Richards for his presentation on the new engineering inspection that we described in the May 4th letter to the board.

Comments Before the Vermont Public Service Board
By Stuart Richards, Chief Inspection Program Branch/NRR
June 28, 2004

Slide 10

Good morning. I'm Stu Richards, and I'm the Branch Chief of the Inspection Program Branch at the NRC Headquarters office in Rockville, Maryland. I'm the NRC manager responsible for defining the NRC inspection program for operating reactors. I have about 28 years of experience with nuclear power, including about 15 years involvement with the inspection program in various capacities. During my career with the NRC, I have been assigned to an operating reactor as a full time on site inspector, and I have led major engineering team inspections.

Slide 11

Bill Ruland has described to you our technical review process for changes to operating licenses. These reviews are carried out by our Headquarters staff. A second, but complementary NRC activity is our inspection program. The inspection program is implemented by our four regional offices by having NRC inspectors directly examine components, activities, and records at the plant site.

The NRC has performed inspections in the design and engineering areas for many years. Most recently, we have conducted significant design inspections at all operating reactors nationwide every two years, as part of our routine baseline inspection program.

Nonetheless, earlier this year the Commission directed the NRC staff to develop a revised inspection process in the engineering area, with the goal being to enhance our efforts in this area, and to make increased use of risk information in the inspection.

Subsequently, the NRC staff proposed and the Commission approved a revised inspection process to be conducted on a trial basis at four operating reactors. Due to the interest expressed by stakeholders here in Vermont, we will perform the first of these trial inspections at Vermont Yankee, in August of this year. The inspection includes about 700 hours of direct inspection effort, which is an increase of about 200 hours above the normal level of effort in the engineering area.

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The purpose of the inspection is to thoroughly examine selected components at Vermont Yankee, from the design documents that lay out basic engineering requirements, to the operation, testing, and maintenance of the components in actual use. In short, for the components selected, the inspection will determine whether the design is correct, and have the design requirements been properly implemented and maintained in the plant.

This inspection will support the NRC review of Entergy's request for a power uprate. The inspection is being coordinated with the NRC staff who are conducting the technical reviews of the power uprate application. The technical review team in headquarters will be discussing with our inspection team power uprate issues that may warrant consideration by the inspection team. Likewise, the inspection team will be reporting back to the technical review team with their observations and findings. Although the engineering inspection is not designed to be a power uprate inspection per se, the effect of the inspection will be to closely examine a number of the key components that will overlap with those in the power uprate review. In this way, the inspection will support the agency's decision on whether or not to approve the power uprate application.

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The four nationwide trial inspections will be conducted by a team of six or seven inspectors, including two or three contractors with significant experience in power plant design. All of our NRC inspectors go through a formal qualification process, which includes classroom work, on-the-job training, and examination by an oral qualification board. The NRC inspectors assigned to the trial inspections will typically have extensive experience with our inspection program.

Under NRC regulations, the operators of nuclear power plants must operate, test, and maintain safety components in accordance with specific technical requirements. They must also maintain records of their work. Allowing unfettered observation of work and full examination of relevant records by NRC inspectors is a condition of the license we issue to approve operation of a facility. Although our inspections are thorough in what they inspect, our inspections are a sampling of various safety activities, components, and records. In the case of the engineering inspection we are discussing today, the inspection makes use of various data to identify components and operator actions of relatively high safety significance for examination by the inspection team. To accomplish this, a considerable amount of preparation work will be completed by members of the team before the actual inspection begins.

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Another consideration in choosing our inspection samples is experience from the operation and inspection of other plants throughout the industry. As part of their preparation, the inspection team will review past problems to help focus the inspection. We will be looking at plant components that can cause plant transients or events to occur, and those components that respond to events to ensure the plant remains in a safe condition. Because the inspection procedure being used for the inspection at Vermont Yankee is a trial inspection, in NRC jargon it is referred to as a Temporary Instruction. The Temporary Instruction contains more detailed information on the inspection we will be conducting. A copy of the Temporary Instruction has been provided to the Vermont State Nuclear Advisor, and is available to the public on the NRC website.

Performance deficiencies that are identified during an inspection are called findings. In almost all cases, findings are quickly provided to the operator of the power plant in order that prompt corrective action can be taken when appropriate. Findings are also assessed by an established NRC process to determine the relative significance of each finding. They are categorized as either green, white, yellow, or red, in order of increasing significance. The collective findings from all inspections at a given plant over a period of time are integrated to determine the level of future inspection effort to be carried out at each power plant. If needed, the NRC has other regulatory tools available to require prompt action by holders of NRC licenses.

Brian Holian from our regional office in Pennsylvania will now discuss in more detail the inspection program at Vermont Yankee. Brian

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Comments Before the Vermont Public Service Board
By Brian Holian, Deputy Director Division of Reactor Projects, Region I
June 28, 2004

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Good Morning, my name is Brian Holian and I am the Deputy Division Director for Reactor Projects, in Region I. The NRC has four regional offices, set up covering separate quadrants of the U.S. The Region I office is located in King of Prussia, PA - and we are responsible, among other things, for implementing the NRC inspection program for the 26 reactors in the northeast. For reactor sites, we have two technical divisions...Reactor Projects, which manages the resident inspectors and oversees day to day activities at all the plants, and Reactor Safety, which manages the cadre of reactor specialist inspectors who are based at our regional office and who rotate among the sites conducting inspections. I have worked previously at NRC HQ, and in both reactor divisions in the Region.

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Inspection, and assessment of inspection findings and licensee performance, is at the heart of what the region does. In the words of our regional administrator, Hub Miller, we ask our inspectors - in simple terms - to focus on what's important, to find problems, and to communicate them effectively.

We utilize resident inspectors, who report to work each day at the site, and specialists from the regional office and on occasion other regions and Headquarters, to perform inspections in a variety of disciplines - including engineering, radiological protection, security, and corrective actions - to name a few. For Vermont Yankee (VY), the Senior Resident Inspector is David Pelton, who is with us today; the resident is Beth Sienel, who is at the plant today.

As we reported at our annual assessment public meeting, held on March 31 near the plant, we conducted over 4600 hours of direct inspection at VY during calendar year 2003.
We expect our inspection effort for calendar year 2004 to be, as a minimum, several hundred hours above this number.

It is important to note that the regional offices, and the NRC in general, have the ability to quickly increase inspection hours and oversight at a site, based on a plant event or degrading plant performance. Our inspection reports are publically available. As an example of the type of work performed by our resident inspectors, the following is an excerpt taken out of a recent report:

Our inspectors reviewed a maintenance error that resulted in a violation for an inadequate procedure for the development and use of work instructions for work affecting quality. Specifically, no work instructions were provided to include proper verifications of safety-related piping locations in the vicinity of core boring operations. As a consequence, a contractor inadvertently perforated a section of service water piping during this concrete drilling. The finding was of very low safety significance since the deficiency did not result in a loss of safety function of the system.

The finding provided here is an example of the type of reviews, both in operations and engineering, that our inspectors do on a daily basis at the plant.

The Public Service Board, and other interested parties, have been specifically interested in NRC's engineering inspections at VY. I will briefly describe three such team inspections that have been held since 1997. As a result of an agency-wide lessons-learned effort following the Millstone and Maine Yankee inspection results in the mid-1990's, the NRC conducted what we called an Architect Engineering Inspection at VY in 1997. This team was comprised of five contractors and was led by an NRC headquarter team leader. The team performed an in-depth review of two safety related systems, the low pressure coolant injection and the residual heat removal systems (these are systems that are used in any postulated event where either supplemental water or cooling may be needed; the systems are also used during shutdowns and refueling outages). The team had several findings, including violations, however, the team noted that the systems would perform their required safety functions.

During the timeframe of this inspection, and following, the licensee for Vermont Yankee, similar to numerous other plants nationwide, performed extensive verifications of what the NRC describes as adherence to their design and licensing basis (basically this entailed reviews of systems and procedures to ensure they were consistent with the as designed plant).

In 2000, and again in 2002, the NRC performed Safety System Design Inspections. During these inspections, which nominally had 6 inspectors on-site for two weeks, the NRC verified the initial design and modifications on several risk significant safety systems, including high pressure coolant injection, reactor core isolation cooling, and the automatic depressurization systems. Findings from these recent inspections have been assessed as being of very low risk significance, and have been promptly corrected by the VY staff.

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As Mr. Richards mentioned, VY has been chosen for the first inspection of NRC's new Engineering Assessment Inspection. The team composition is being finalized, and NRC preparations are ongoing. Next steps include drafting the inspection plan, which includes component and operator actions that will be inspected, and gathering the team for pre-inspection in-depth preparation. The team will be on-site during three separate weeks in August, and spilling over to early September. The NRC will schedule a public exit meeting, expected to be mid to late September, to discuss the team's findings. A publicly available inspection report will follow.

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Stakeholders in Vermont have asked for an independent look at Vermont Yankee. The NRC routinely incorporates the concept of independent views and inspections. The NRC has a rotation policy for our resident inspectors; we also have our residents perform objectivity inspections at other similar plants; and our specialist inspectors on engineering teams are often supplemented with independent contractors. It is also an expectation that the regions share inspection resources among regions, which aides in providing fresh perspectives and insights.

The VY team will be an independent review. The three contractors, with diverse backgrounds in electrical, mechanical, and instrumentation, have not been employed by Vermont Yankee or its owner, Entergy. The team leader is being finalized - our current plan is to utilize an experienced team leader from HQ. Finally, the region I inspectors have not been on engineering inspections at Vermont Yankee in the past several years.

In accordance with our Memorandum of Understanding with the State, there will also be an observer from the state of Vermont. These arrangements are still being finalized.

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Other NRC inspections also continue at VY throughout this year. Several of the NRC's baseline inspections are focused on licensee preparations for the proposed power uprate. For example, the NRC will review plant modifications, including the impact of these changes on what we call initiating event frequencies, and surveillance testing and operations procedure changes. The region has already reviewed several of the modifications that were installed in the recent outage. Additional inspections will be performed throughout the year, tied to milestones in the power uprate review process.

As I mentioned earlier, the NRC has the ability to supplement our inspection activity - based on events, or the number and significance of findings. For example, following the main transformer fire of June 18 at the VY site, the NRC augmented on-site inspection with a specialist in fire protection and electrical systems. In August, we will be performing what we call our Mid-cycle assessment for all plants in the region, where we re-look at our inspection planning process. The region, working with Headquarters staff, assesses licensee performance and modifies as necessary, our inspection plans.

With that summary, I will turn it back to Mr. Ruland.

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Closing remarks - Bill Ruland:

I hope that our presentation today has shown you that we take the review of the Vermont Yankee power uprate very seriously and that our review is thorough, comprehensive, and is focused on safety.

Entergy must provide sufficient justification to prove to us that safety is maintained. They aren't there yet.

And ...our review is not done.

We value your comments and give them serious consideration. It sometimes takes a while for us to respond to your letters because of the level of attention we give to your comments.

Our planned engineering inspection will be thorough, independent and will cross several systems. We will have strong communication between the reviewers of the power uprate application and the inspectors to ensure that the review and inspection are closely linked.

I want to re-emphasize what I said earlier. The regulation of the radiological safety of the Vermont Yankee power plant is our responsibility and we take that responsibility very seriously. In fact, we are held accountable for that responsibility by our congressional oversight committees and the public.

That completes our prepared remarks.